



Armed Forces College Of Medicine AFCM



Acute Loss of Vision

Loss of Vision

Transient (seconds to hours)

- Transient ischemic attack (TIA)
- Migraine with aura

Acute (seconds to days)

Cornea/Anterior Segment

- Corneal edema
- Hyphema
- Acute angle-closure glaucoma
- Trauma/foreign body

Vitreous/Retina/Optic Nerve

- Vitreous hemorrhage
- Retinal detachment
- Retinal artery/vein occlusion
- Acute macular lesion
- Optic neuritis
- Temporal arteritis
- Anterior ischemic optic neuropathy (AION)

Cortical/Other

- Occipital infarction/hemorrhage
- Cortical blindness
- Functional (non-organic, diagnosis of exclusion)

Chronic (weeks to months)

Cornea/Anterior Segment

- Corneal dystrophy/scarring/edema
- Refractive error
- Cataract
- Glaucoma

Vitreous/Retina/Optic Nerve

- Age-related macular degeneration (ARMD)
- Diabetic retinopathy
- Retinal vascular insufficiency
- Compressive optic neuropathy (intracranial mass, orbital mass)
- Intraocular neoplasm
- Retinitis pigmentosa

Cortical/Other

- Pituitary adenoma
- Medication-induced (sildenafil, amiodarone)
- Nutritional deficiency
- Papilledema

 Common

Rapid loss of vision

- With red eye (all are emergencies)
 - Acute angle closure glaucoma
 - Acute secondary glaucoma
 - Acute uveitis
 - Acute endophthalmitis (post-surgical and post-traumatic)
- Without red eye
 - Corneal causes
 - Acute corneal edema
 - Macular and retinal causes
 - RD (emergency)
 - CRVO
 - Acute maculopathies as CNV
 - CAR and MAR
 - Optic nerve causes
 - Trauma
 - Acute compression (emergency)
 - Optic neuropathies (AAION is emergency)

- Vascular diseases of the retina
 - CRAO and BRAO
 - CRVO and BRVO
- Retinopathies
 - Diabetic retinopathy
 - Hypertensive retinopathy
 - Renal retinopathy
 - Retinopathy of toxemia of pregnancy
 - Anemic retinopathy
 - Sickle-cell retinopathy
 - HIV retinopathy

- Retinal detachment
 - Primary
 - Secondary
 - Exudative
 - Tractional
- Retinal dystrophies and degenerations
- Maculopathies
 - Macular edema
 - Macular dystrophies
 - Central serous chorioretinopathy
 - Macular hole
 - Age-related macular degeneration

Retinal artery occlusion

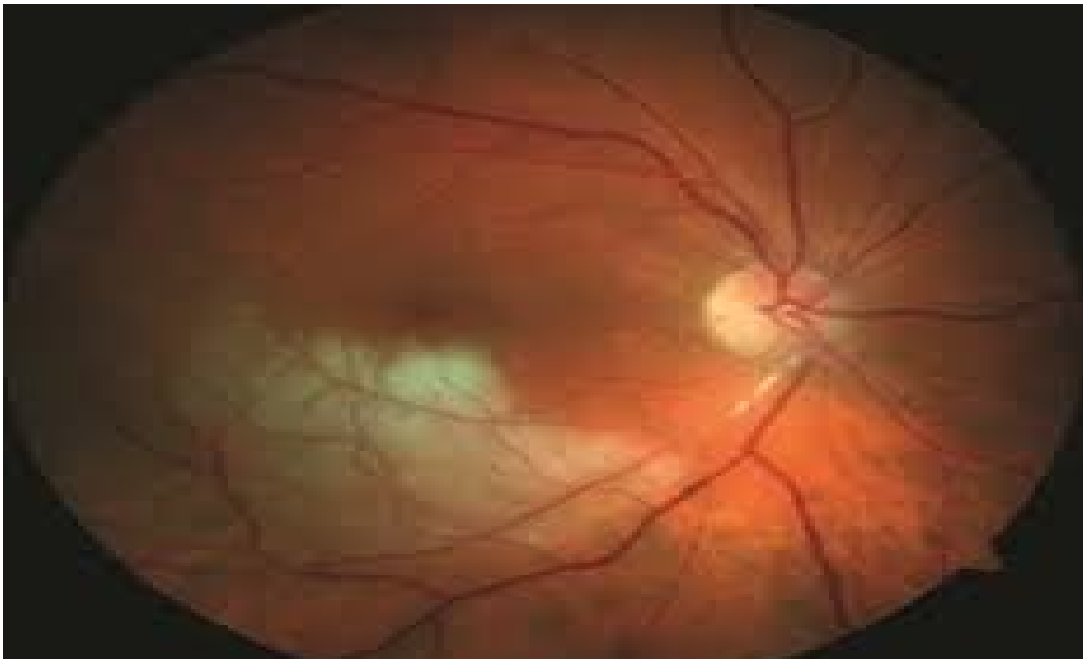
- A 60-year-old had **sudden** darkening of vision in his left eye. He describes as if the room light has been suddenly shut down. He had a **previous** similar episode but lasted few seconds as he rubbed his eyes and the light came back. Now it is lost for 5 hours now. Vision is **HM** and the eye look very **normal**, however on closure of the right eye, the left pupil dilates. Examination reveals a generally **pale** retina and the fovea is standing out like a **cherry-red spot**. All retina arteries are **narrowed** and the blood column inside them seem segmented like **cattle-trucks**

Branch artery

- A 45-year-old noticed the appearance of a dark area in the **upper field** of his right eye. He is a drug-abuser. He is being treated for infective heart valve problems. His vision is 6/6 OU. Anterior segment free. Fundus examination shows an area of pallor along an attenuated inferotemporal arterial branch. Closer observation reveals an embolus lodged in the artery

C/BRAO

- Occlusion of a retinal artery is usually thrombotic in old age and embolic/vasculitic in young age
- Ischemia of all/part of retina results in ischemic necrosis of the inner $\frac{1}{2}$ of retina (outer $\frac{1}{2}$ receives) from choroidal diffusion
- Vision is lost (**HM**) if macula involved and **positive scotoma** if macula is spared
- Retina is whitish (cloudy swelling) esp. in posterior pole (several ganglion cell layers) and fovea stands out as **CHERRY RED SPOT (no ganglion cells)**
- Arteries are attenuated with segmentation of blood column
- Treatment (**EMERGENCY** 2-3 HRS) is mainly by acute **lowering** of IOP
 - **IV acetazolamide** and **strong ocular massage**
 - **Paracentesis**
 - **Antiplatelets/fibrinolytics**
 - **VD** by breathing 5% CO₂



Retinal vein occlusion

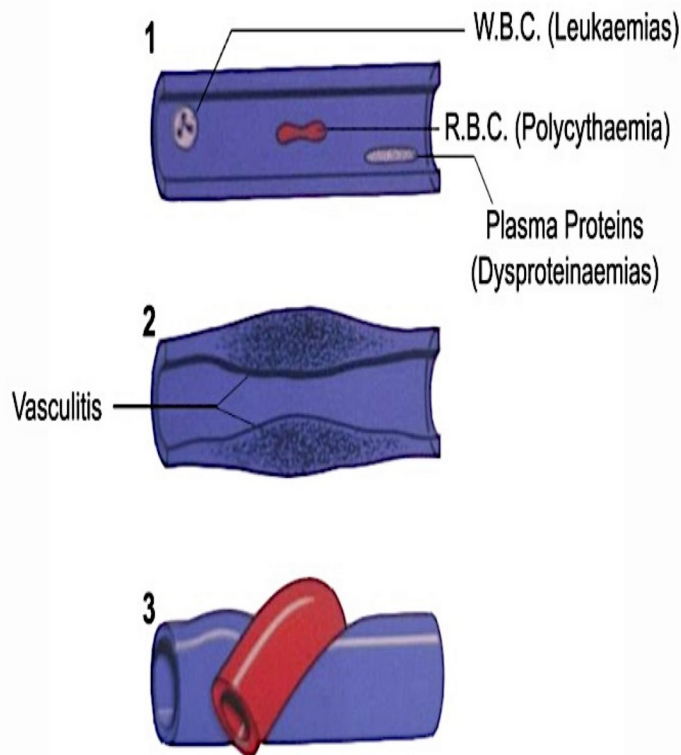
- A 50-year old **woke** up with blurred vision in the right eye. Over the next few hours vision rapidly deteriorated as if there is a dense veil. Vision is 3/60 and the eye looks normal except for mild RAPD.
- Fundus examination reveals **extensive** retinal **hemorrhages** at all levels, some **cotton wool spots** and **dilated** tortuous **veins**. The picture reminds you of a **stormy sunset**.

- A 50-year-old notices that the lower part of the field is blurred. She gives a history of type II diabetes. Vision is 6/18 OD, 6/6 OS. Examination reveals retinal hemorrhages along the upper temporal branch vein. The macula shows some edema.

Retinal Vein Occlusion



VENOUS OCCLUSION



Increased coagulation :
leukemia , polycythemia ,
dysprotenemia

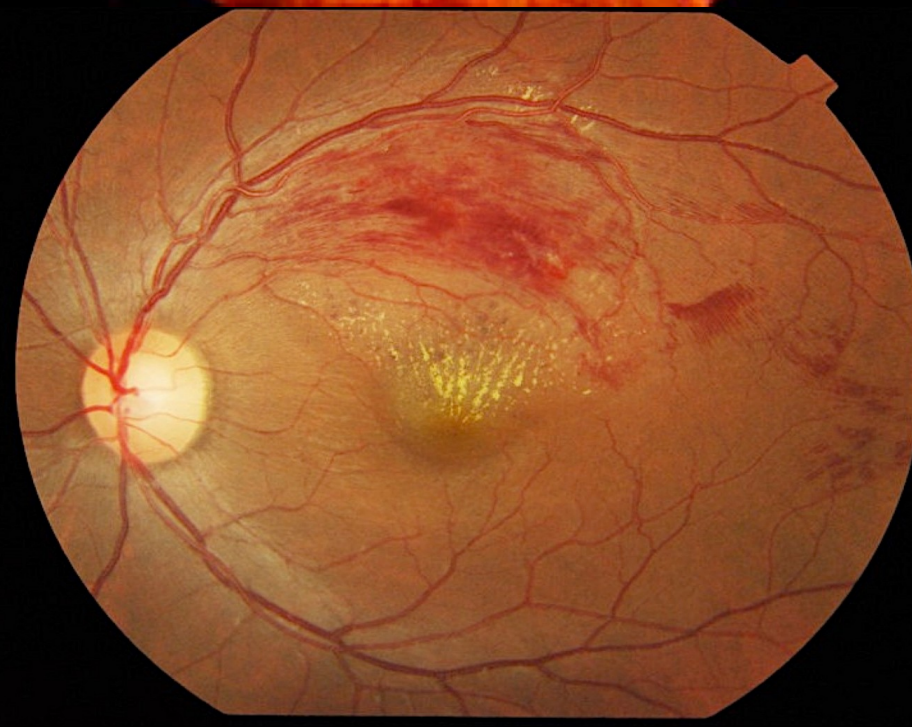
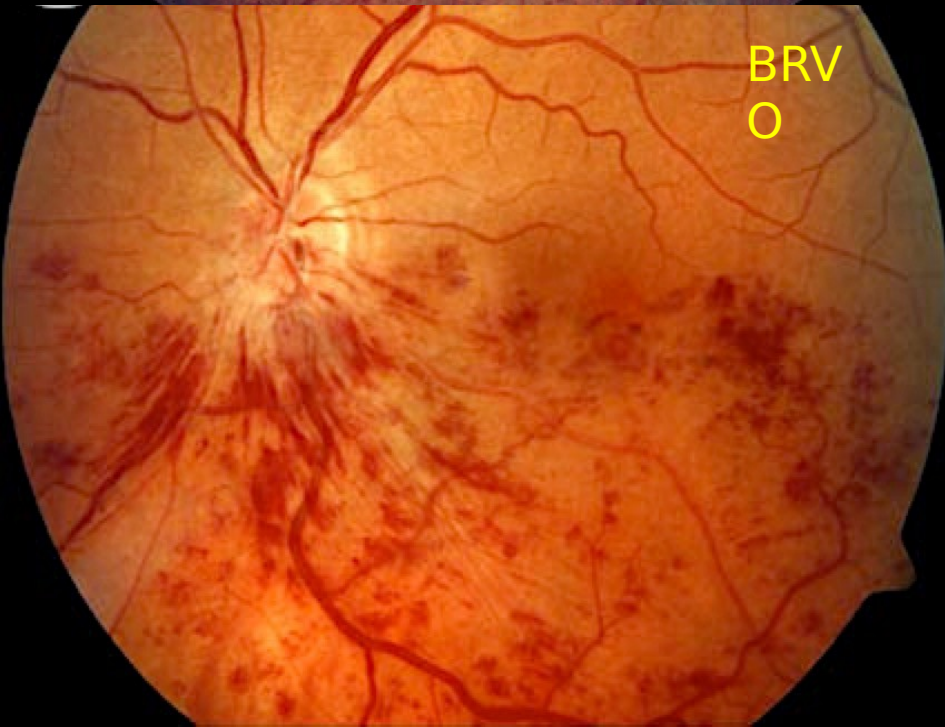
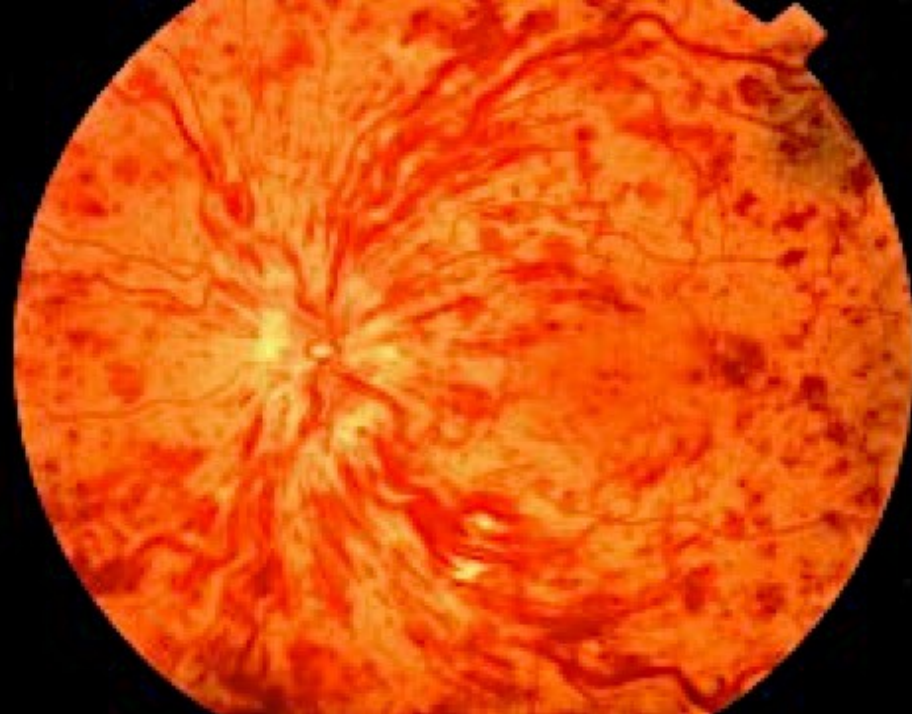
Vasculiti
s

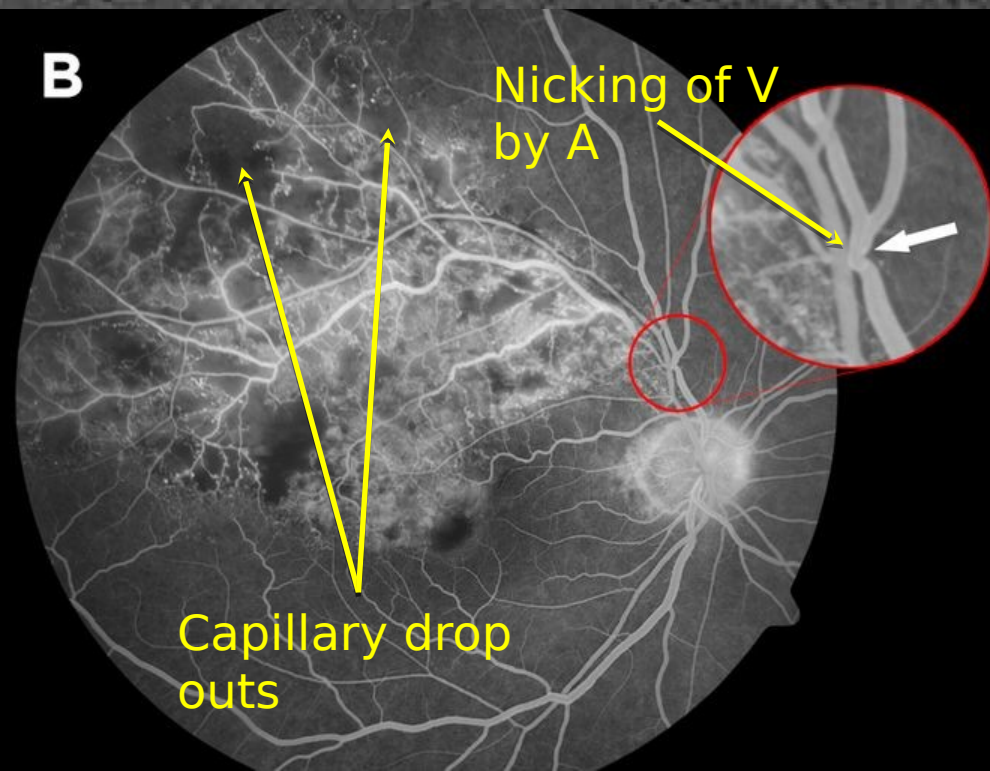
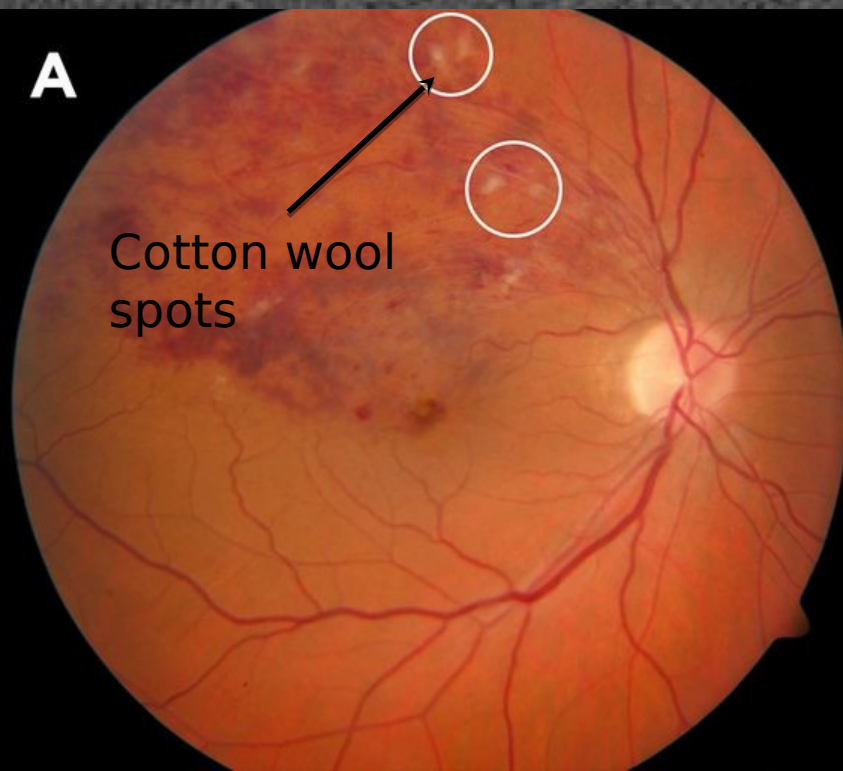
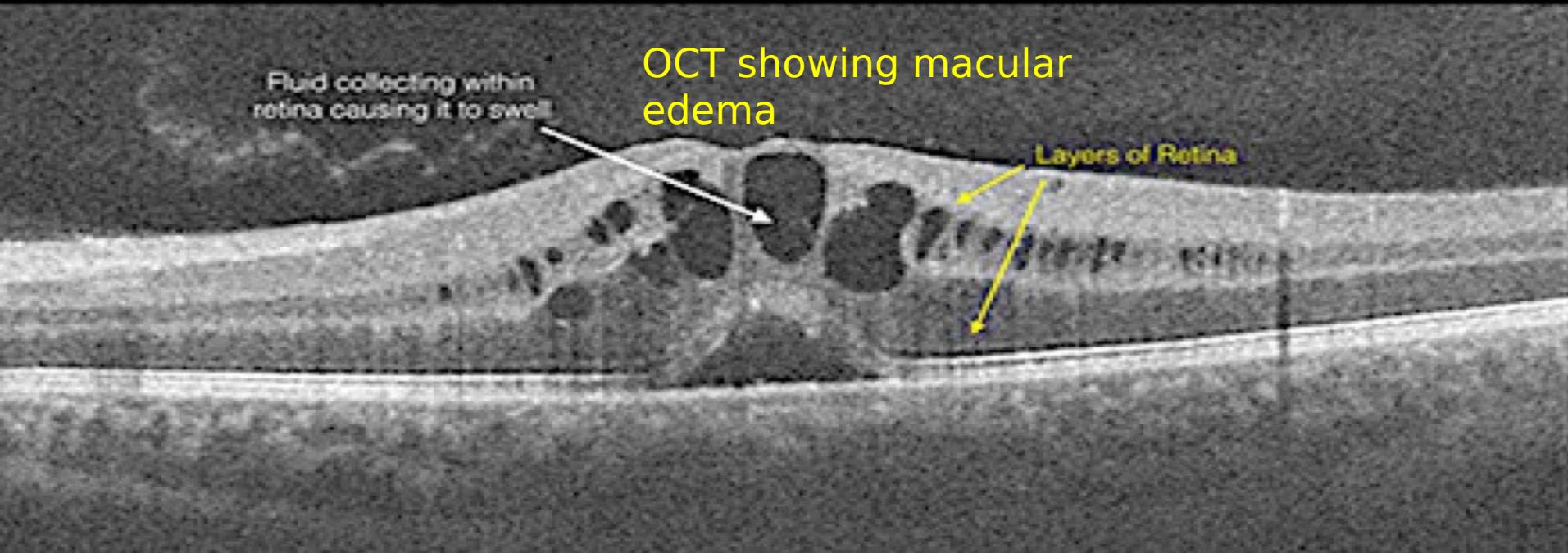
Hypertension /
atherosclerosis

Open-angle
glaucoma

C/BRVO

- Commonly occurs during sleep resulting in acute loss of vision in the morning
- Vision is usually 1/60-6/60
- Fundus is full of hemorrhages, cotton wool spots, tortuous looping veins and disc edema
- After the acute stage there is persistent macular edema
- After 3-4 months retinal neovascularization will occur and **PRP must** be done or neovascular glaucoma will occur Panretinal photocoagulation
- Treatment is by **monthly injection of anti-VEGF** for 6-8 months





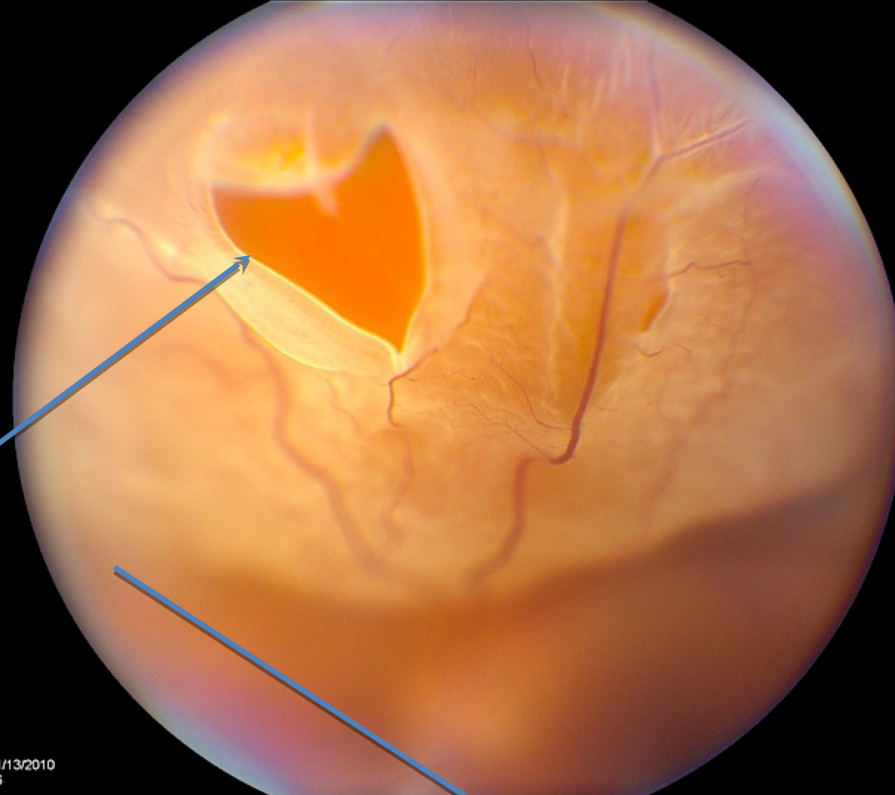
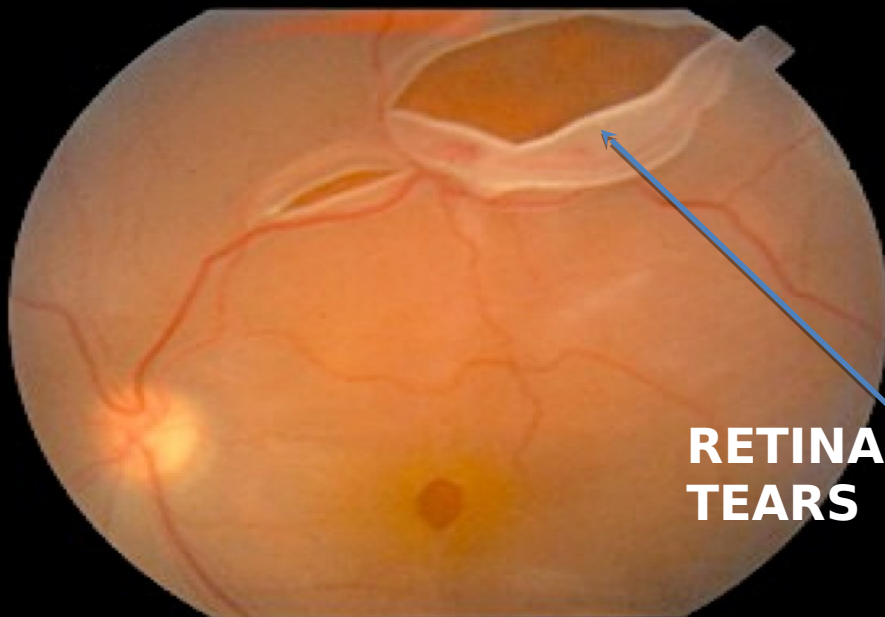
Retinal detachment (RD)

- Retinal detachment is the separation of the retina from the choroid
- Embryologically the **retinal pigment epithelium** (RPE) is the outer layer of the optic cup and firmly adherent to the choroid
- The inner retinal layers (sensory retina) are the inner layer of the optic cup and there is a potential space (between inner and outer layer of cup)
- So what happens in RD is the separation of the sensory retina from the RPE (sensory retinal detachment)

Retinal detachment

Mechanisms

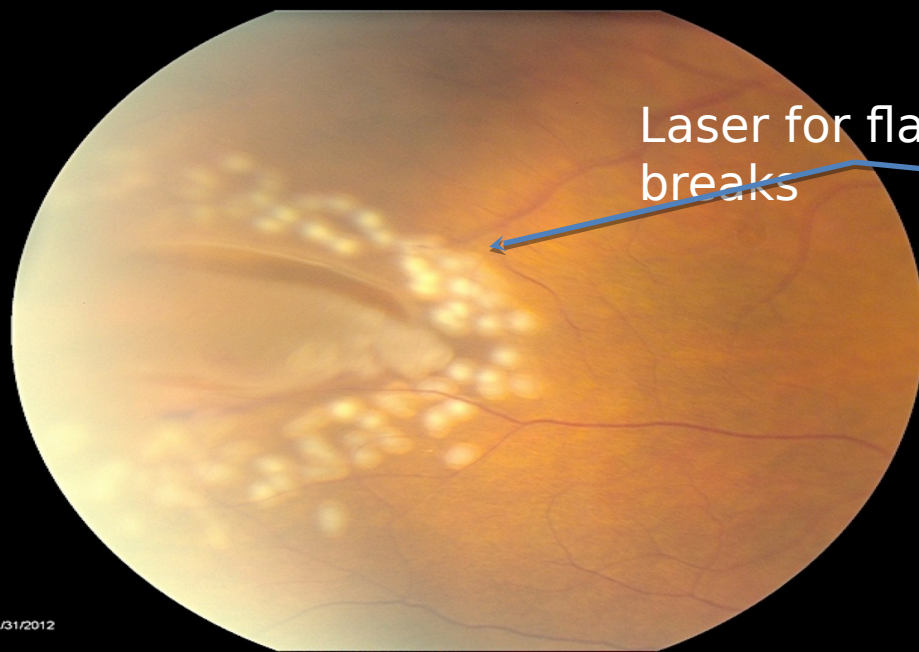
- RD can result from several limited mechanisms
 - Retinal tear (tear=rhegma in latin): allows fluid vitreous to enter the potential space and separate the neurosensory retina. This is called **PRIMARY** or **RHEGMATOGENOUS** retinal detachment.
 - Exudation from the vascular choroid across the RPE: this is called **EXUDATIVE** retinal detachment and is seen in hypotony (after trauma or glaucoma surgery), choroidal melanoma and Haraada uveitis. When limited to the macular area it is called **SECONDARY** RD
 - Traction from the vitreous: formation of fibrous strands in the vitreous that pull the retina causing **TRACTIONAL** RD; this is seen in proliferative DR and perforating trauma



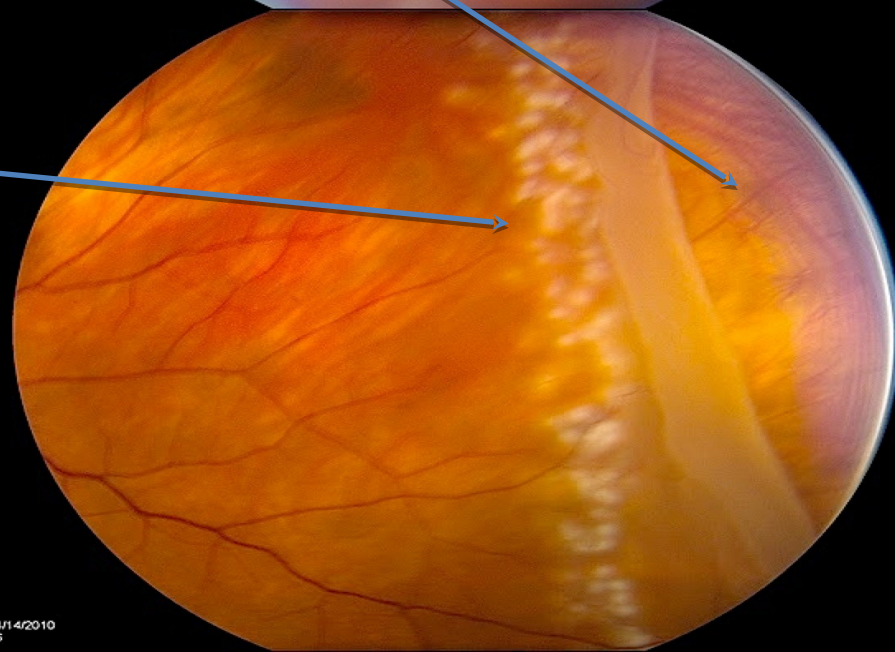
**RETINAL
TEARS**

1/13/2010
6

E



Laser for flat
breaks



4/14/2010
6

AE

1/31/2012
1

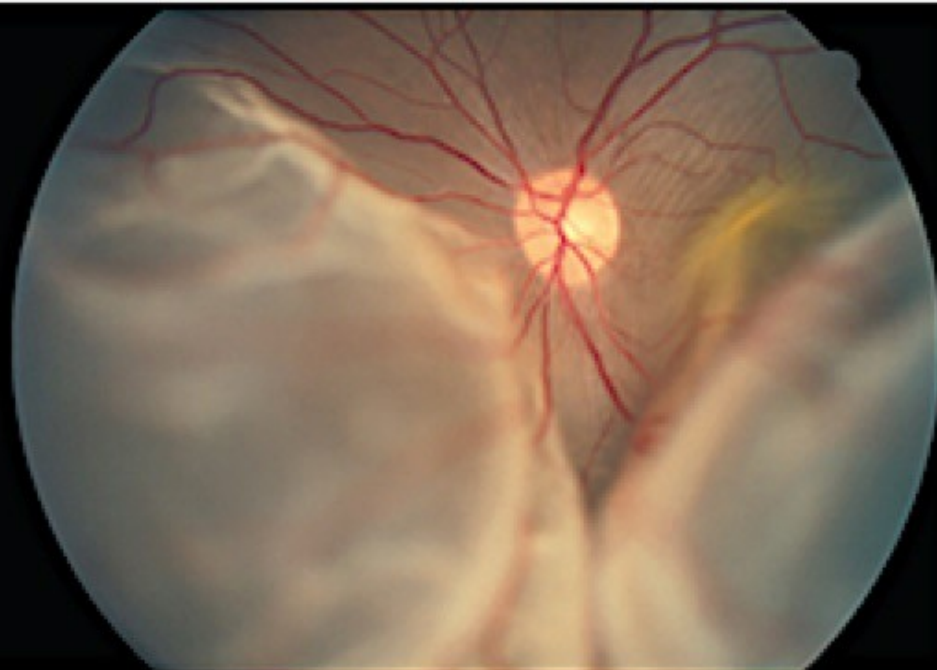
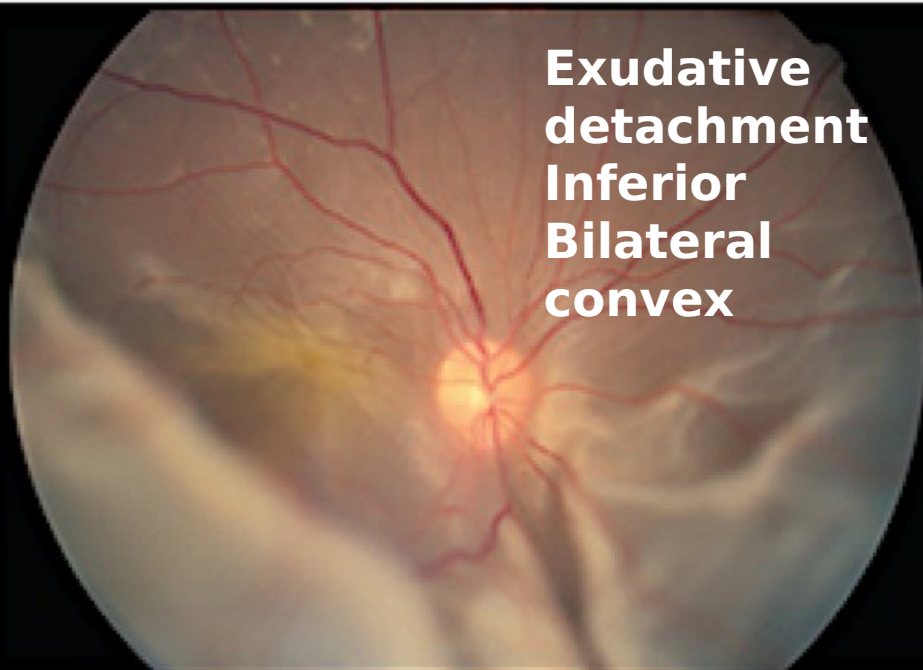
Tractional Retinal Detachment

Ring of
white scar
tissue



Edward S. Harkness Eye Institute
Columbia University

Exudative
detachment
Inferior
Bilateral
convex



Retinal detachment

Primary

- Results from a retinal tear
- Tears are weak points in the retina that are torn by vitreous attachment and movement (near vitreous base)
- They are far more common in **high myopia**
- When a retinal tear occurs it produces distinct symptoms; flashes of light opposite the position of the tear (**PHOTOPSIA**), sudden appearance of moving black spots and lines (**MUSCA VOLITANTES**)

Retinal detachment

Primary

- When RD occurs around the tear (break) there are NO symptoms (**subclinical RD**)
- As the detachment spreads the patient starts noticing a darkening of an area of the field (commonly down as most breaks are up) □ a progressive veil (scotoma) with 6/6 vision
- Once the macula detaches vision acutely drops from 6/6 to HM
- A detachment **approaching** the macula is a **MEDICAL EMERGENCY**

Retinal detachment

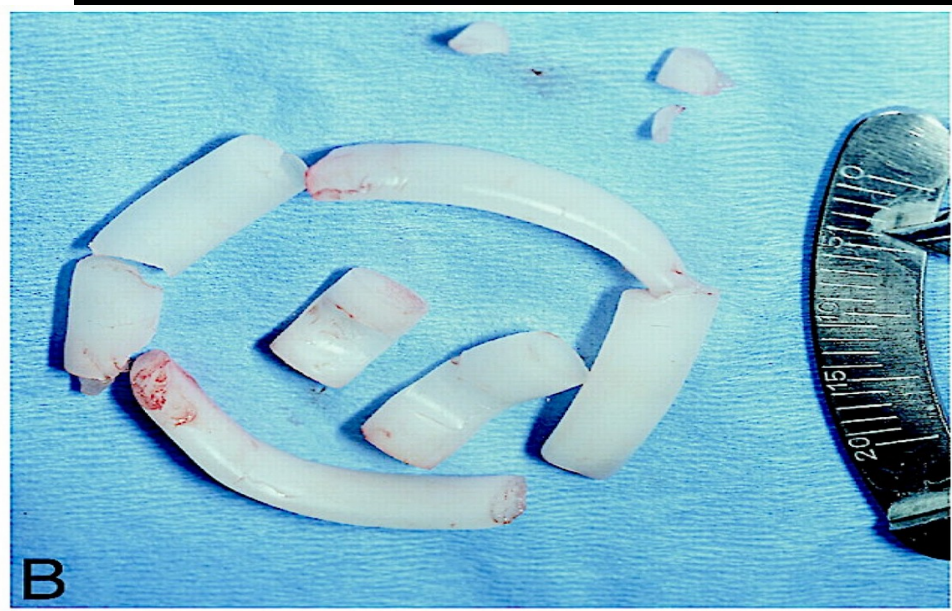
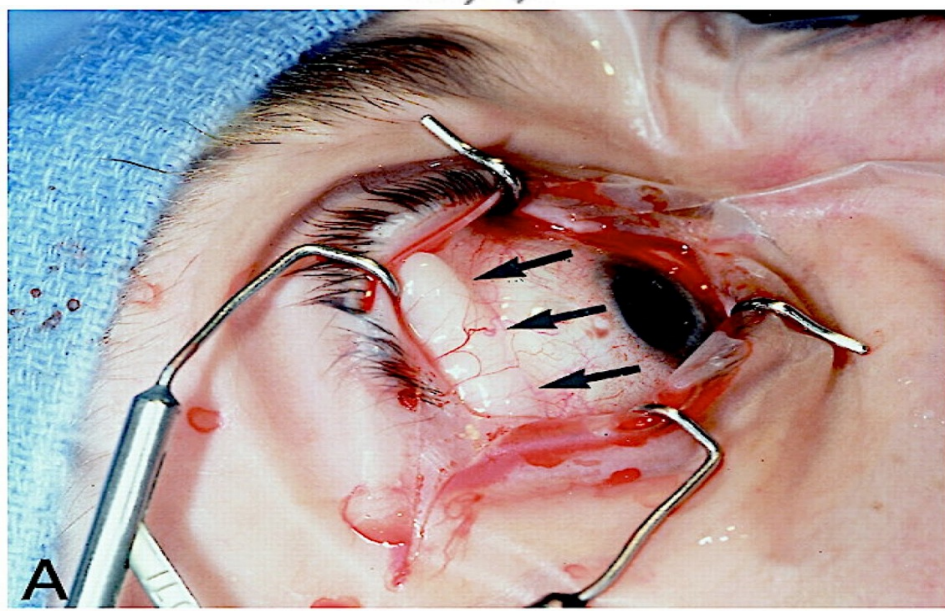
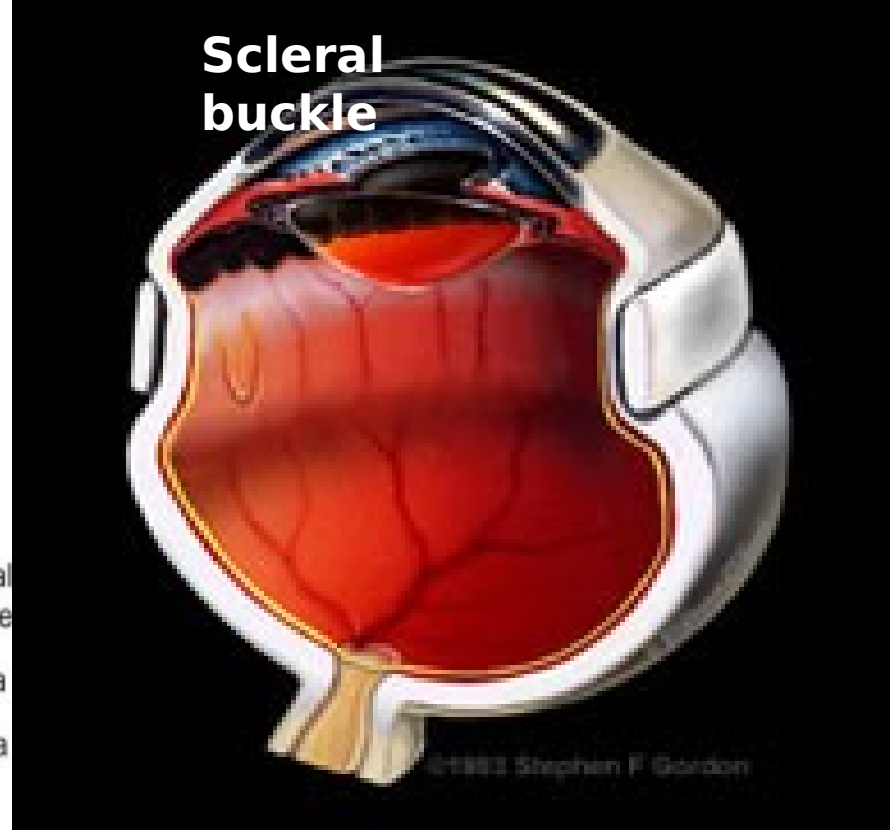
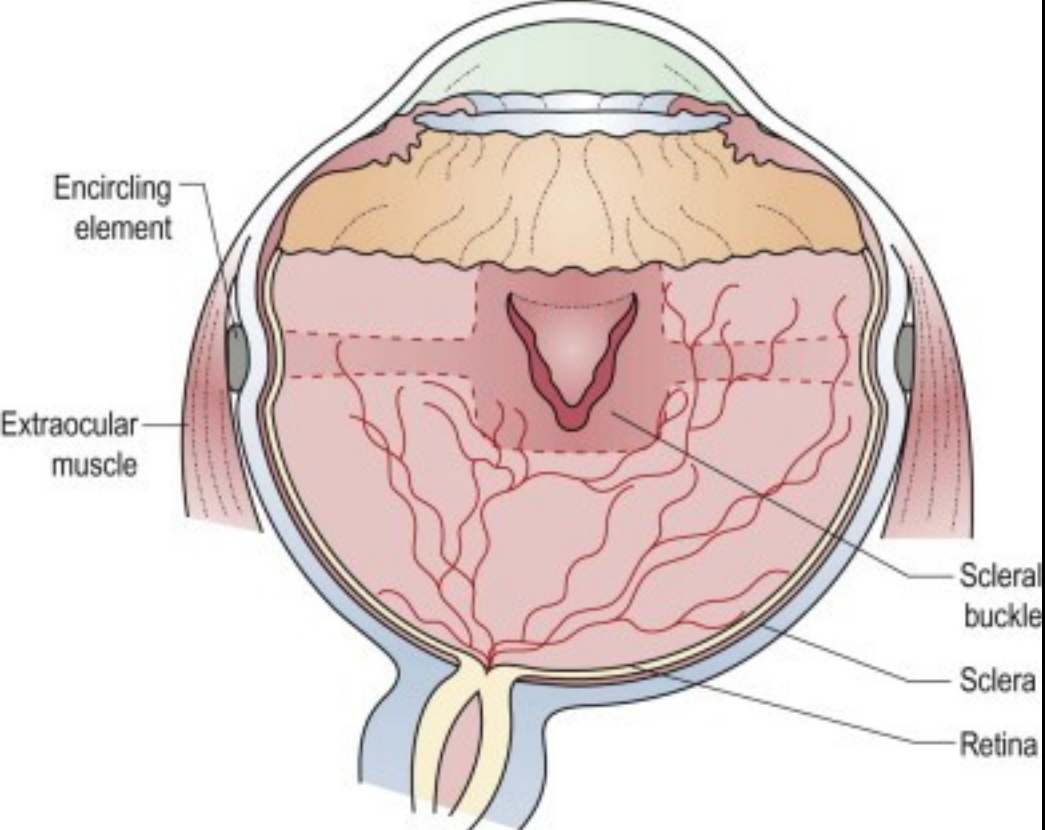
Primary: Management

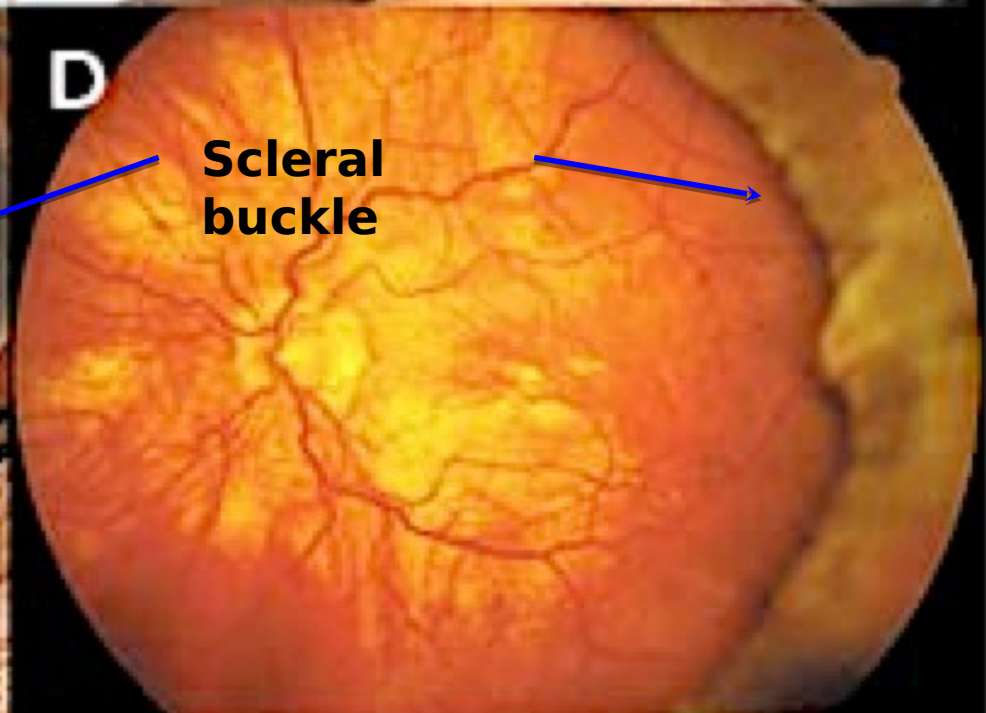
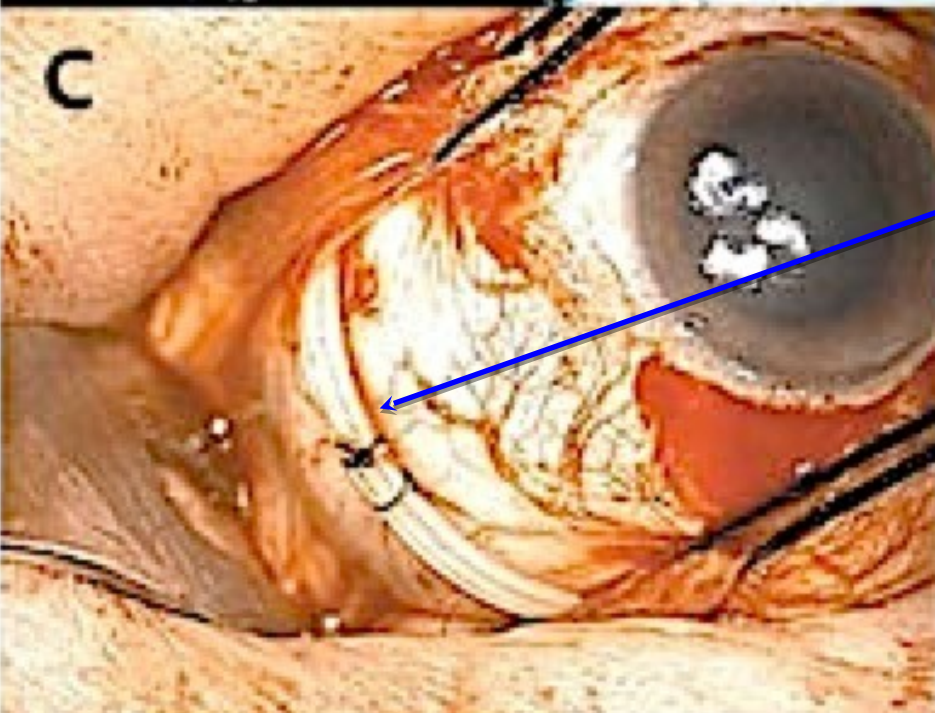
- The aim of treatment is to CLOSE THE RETINAL BREAK (tear). This can be achieved by several ways:
 - **Flat breaks:** can be surrounded by **LASER spots** to create chorioretinal adhesion. Laser spots do not work with fluid **under** the tear
 - **Subclinical detachment:** can be surrounded by **laser spots** if small around the break
 - **Extensive RD:** a **buckling** procedure is done
 - **Proliferative vitreoretinopathy:** **vitrectomy** is done. Vitreous is replaced by **GAS** or **SILICON-oil**

Retinal detachment

Primary: buckling procedure

- The sclera is exposed
- The tear is localized
- **Cyotherapy** is placed on the break from outside
- A scleral buckle is placed at the appropriate location
- Subretinal fluid **evacuation**

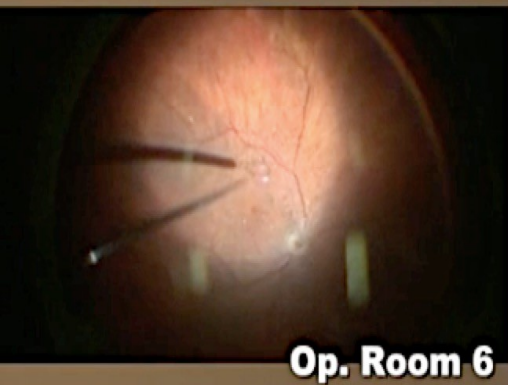




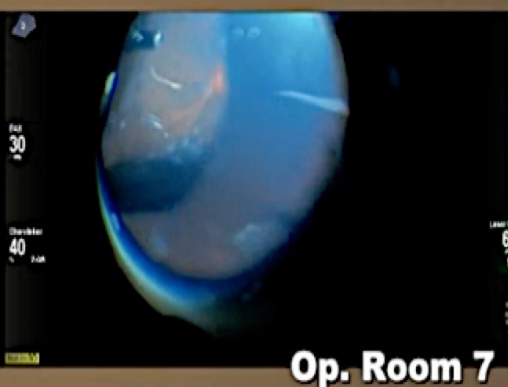
Retinal detachment

Primary: vitrectomy

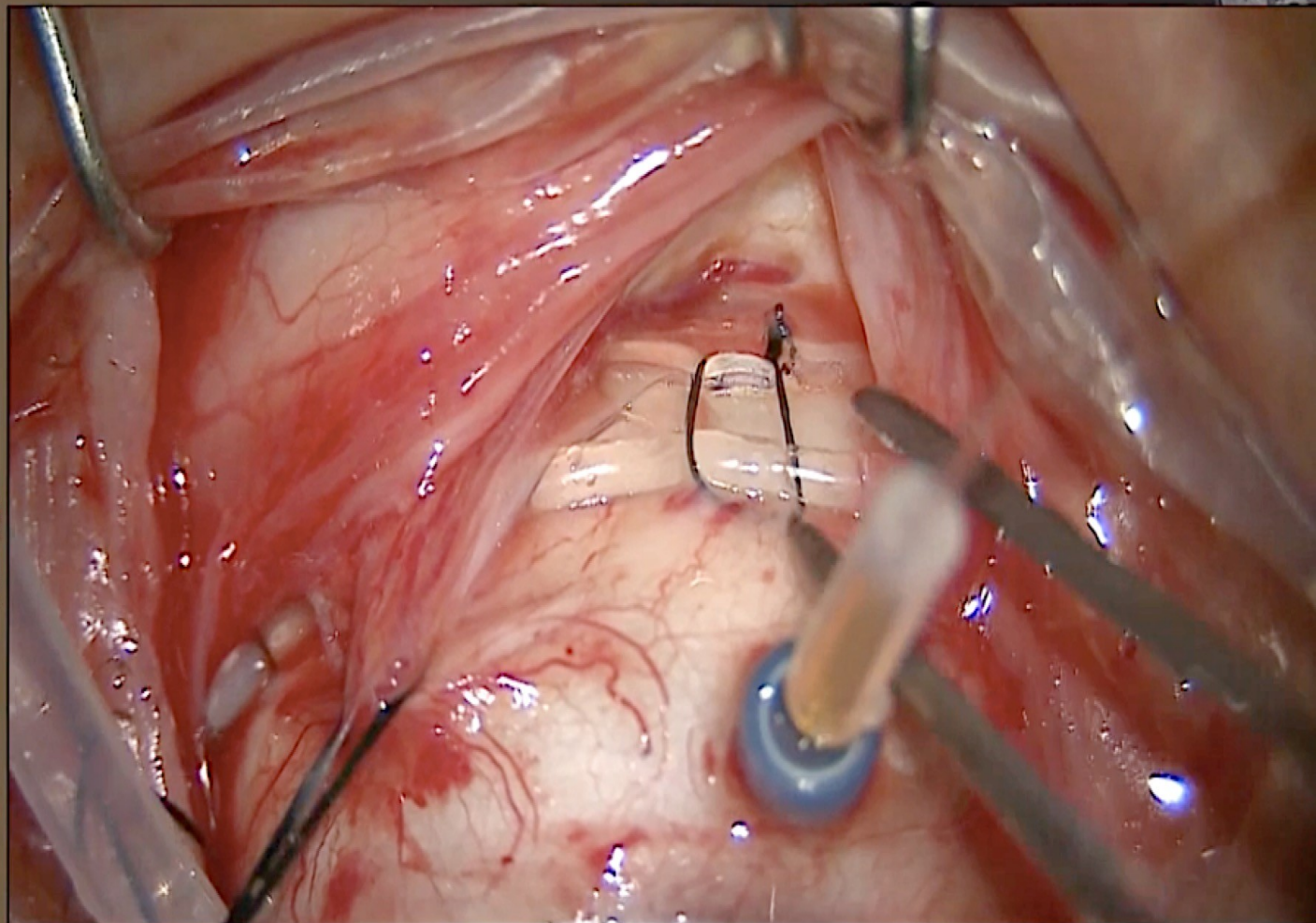
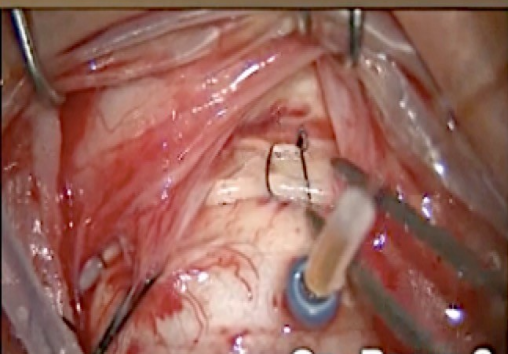
- For cases with vitreous fibrosis
- Vitreous will not the break settle over the choroid
- A cutting small probe is introduced through the **pars plana**
- Vitreous is cut and spirated until all vitreous is removed
- The eye is filled with gas or silicon oil



Op. Room 6



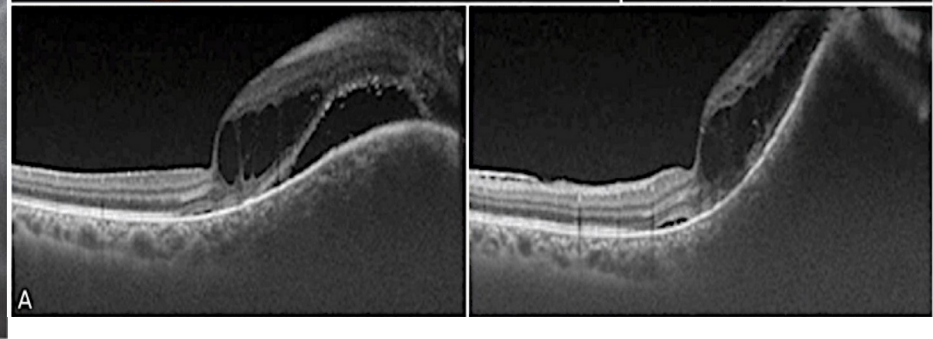
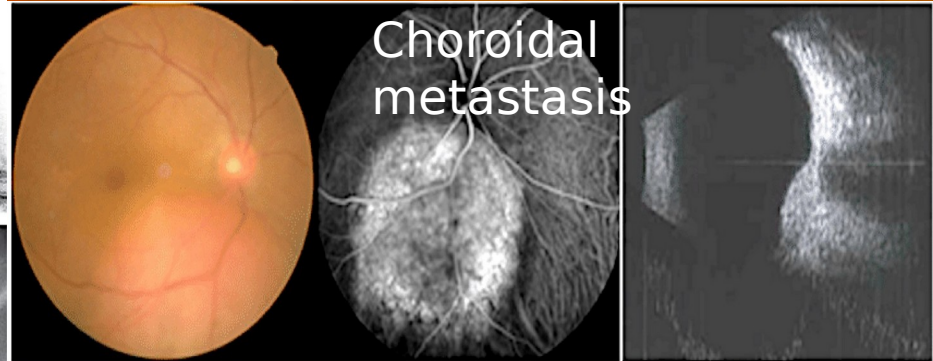
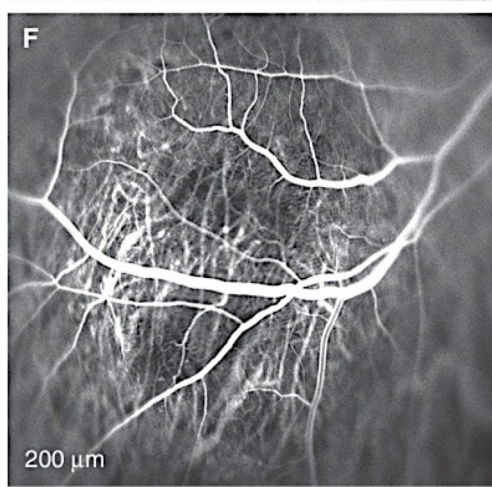
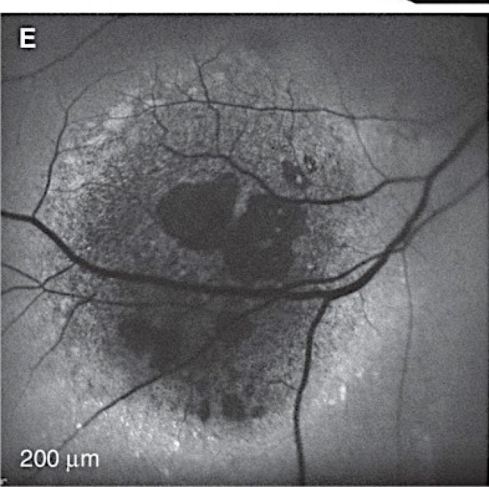
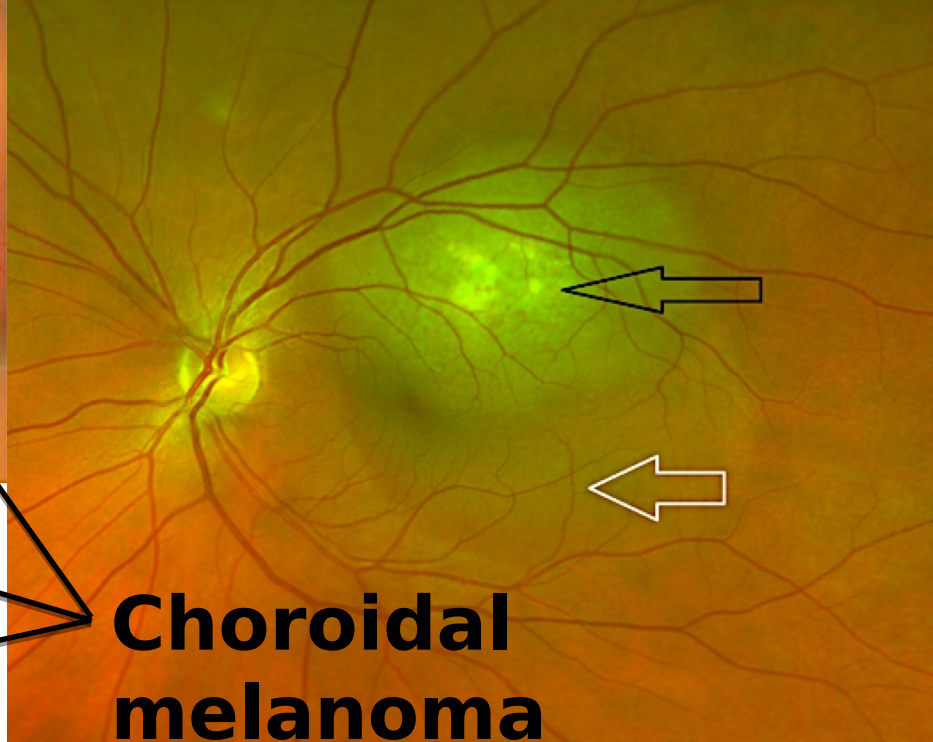
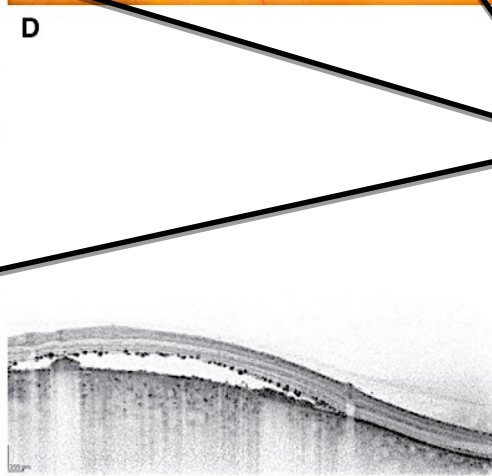
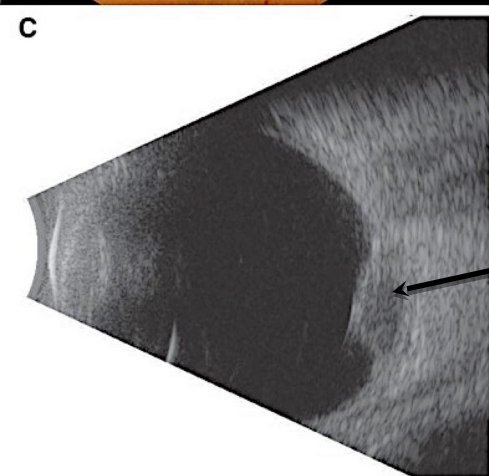
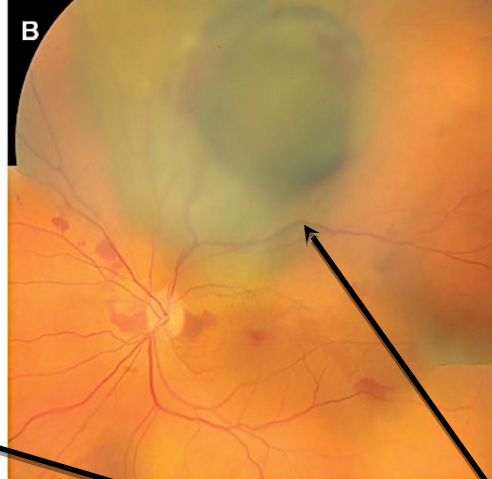
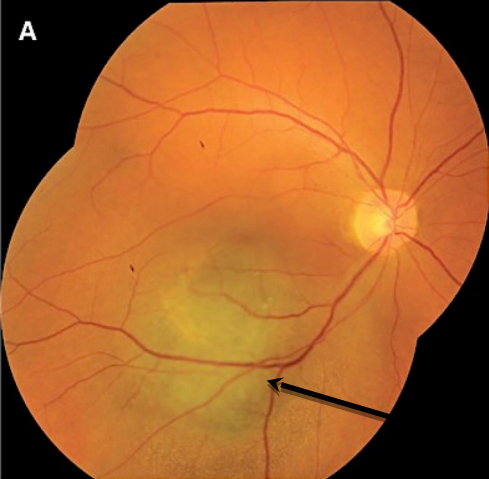
Op. Room 7

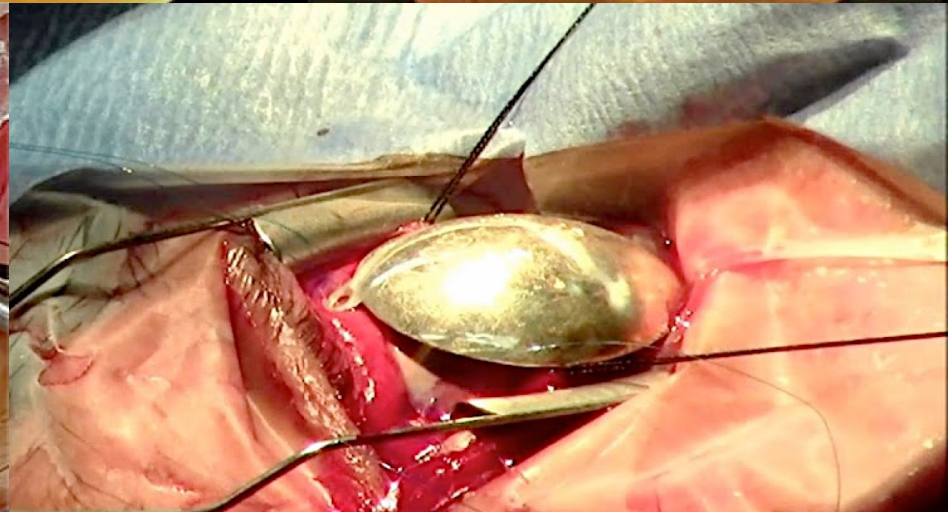
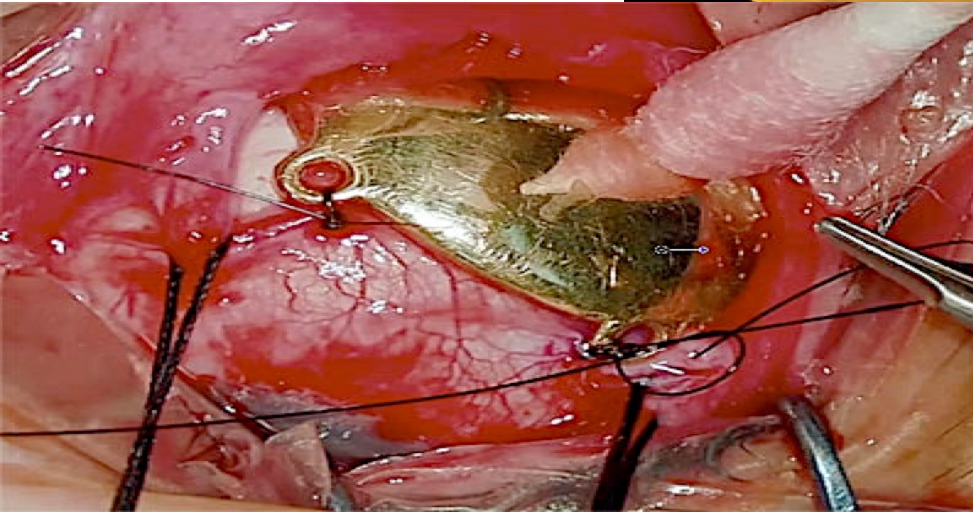
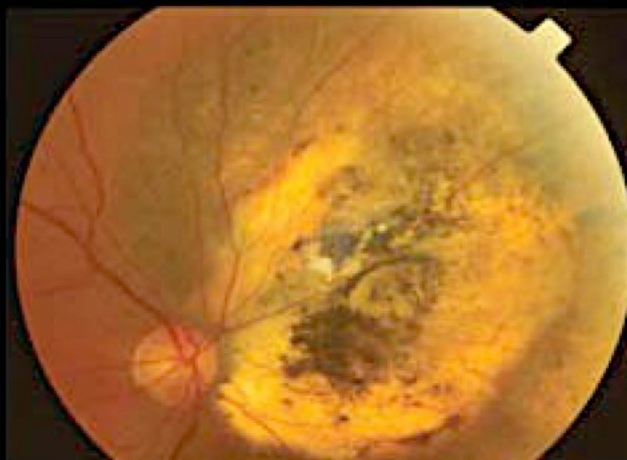
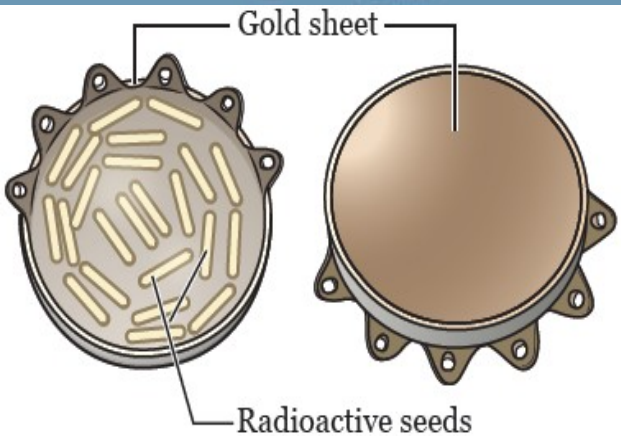
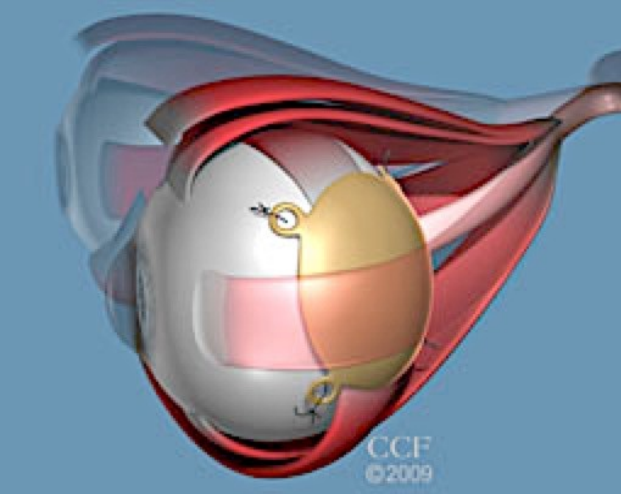


Op. Room 8 - C. Mateo

Secondary Detachments

- Tractional detachment: pulling the retina off by vitreous fibrosis and contraction, main causes are
 - Proliferative diabetic retinopathy
 - Post-virectomy
 - ROP
 - Penetrating trauma
- Exudative detachment is due to fluid pouring from the choroidal side in 3 main conditions
 - Posterior uveitis as VKH and uveal effusion syndrome
 - Choroidal malignant melanoma
 - Severe hypotony





Cortical blindness

- Cortical blindness is a term used to encompass visual loss from lesions of the **retro-geniculate** pathways
- The most common cause is ischemia .
- Patients with cortical blindness due to occipital lesions may be unaware of their visual deficits. If so, the clinical presentation is termed “**Anton syndrome; denial of blindness**”
- Brain MRI is an important diagnostic test

THANK YOU